

### Remarks

This Paper, Petition for a one-month extension of time, and Declaration of Edmund M. Carnahan under 37 CFR 1.132 (hereafter *Carnahan Declaration*) are submitted in response to the Office Action dated December 16, 2009 with a shortened statutory response period that ended on March 16, 2010. This Paper is filed within one month of shortened statutory response period, namely April 16, 2010. The Commissioner is hereby authorized to charge the one-month extension of time fee of \$130.00 and any additional fees to Deposit Account No. 04-1512.

Claims 9-12, 14, 16-18, 20-23, and 27-36 are pending. Claims 1-8, 19, and 24-26 are canceled. Claims 13, 15 and 24-26 are withdrawn as directed to a nonelected species. Applicants reserve the right to rejoin withdrawn claims 13, 15 and 24-26 upon allowance of a generic claim. New claims 28-36 are added.

Support for claim 9 is found at p. 11 line 2 through p. 13 line 10 of the present application.

#### **1. Information Disclosure Statement**

The Office Action identified several infirmities in the IDS submitted on October 21, 2009. A corrected IDS is submitted herewith.

#### **2. Claim 19**

Claim 19 is objected to for failing to limit the claim from which it depends. Claim 19 is canceled rendering moot the objection thereto.

**3. §112**

Claim 10 is rejected under 35 U.S.C. §112 because the term “interpolymer” lacks antecedent basis. Present claim 10 recites the term “copolymer” which finds antecedent basis in claim 9.

Claim 27 is rejected under 35 U.S.C. §112 for reciting two inventions. Present claim 27 depends from independent claim 9 and recites a single invention. In view of the foregoing, Applicants respectfully request the §112 rejections be withdrawn.

**4. The Present Claims are Novel and Nonobvious**

Claims 9 and 27 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,391,629 to Turner et al. (*Turner*).

Claims 9 and 27 are rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 5,798,420 to Cozewith (*Cozewith420*).

Claims 9 and 27 are rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 5,733,980 to Cozewith (*Cozewith980*).

Claims 12, 14 and 16-23 are rejected under 35 U.S.C. §102(b), or in the alternative under 35 U.S.C. §103(a) as obvious over *Turner*.

Claims 10 and 11 are rejected under 35 U.S.C. §103(a) as obvious over *Turner*.

Claims 10-12, 14 and 16-23 are rejected under 35 U.S.C. §103(a) as obvious over *Cozewith980*.

Claims 10-12, 14, and 16-23 are rejected under 35 U.S.C. §103(a) over *Cozewith420*. Applicants respectfully traverse and disagree with these alleged rejections for the reasons set forth below.

No combination of *Turner*, *Cozewith420*, and/or *Cozewith980* discloses or suggests a multi-block copolymer with (i) segmented blocks (ii) differing in comonomer content, the multi-block copolymer having a (iii) polydisperse block number distribution and a (iv) polydisperse distribution of block sizes as recited in the present claims.

Each of *Turner*, *Cozewith420*, and *Cozewith980* discloses a living polymerization system which produces block copolymer. *Turner*, col. 2 lines 30-35; *Cozewith420*, col. 1 line 65 through line 215; *Cozewith980*, col. 1 line 63- col. 2 line 12. Each of *Turner*, *Cozewith420*, and *Cozewith980* disclose essentially the same sequential monomer addition within a living polymerization system using a single catalyst to form block copolymer. *Turner* col. 3 lines 28-51, col. 4 line 36 through col. 6 line 7; *Cozewith420*, col. 7 lines 4-27; *Cozewith980*, col. 6 line 57 through col. 7 line 19; *Carnahan Declaration*, ¶4. The living polymerization of *Turner*, *Cozewith420*, and *Cozewith980* produces block copolymer that is monodisperse. In particular, for each polymer molecule within the block copolymer of *Turner*, *Cozewith420*, and *Cozewith980*, the block size for each respective block is the same and each polymer molecule has the same number of blocks. *Carnahan Declaration*, ¶4. Thus, *Turner*, *Cozewith420*, and *Cozewith980* each disclose a block copolymer that has a monodisperse block distribution and a monodisperse distribution of block size. *Carnahan Declaration*, ¶4.

In stark contrast, the claimed multi-block copolymer has a polydisperse block number distribution and a polydisperse distribution of block sizes. The polydispersity of the block distribution and the distribution of block size is described in detail at p. 11 line 28 through p. 13 line 10 of the present application. This polydispersity (and the concomitant unique physical properties) is the result of the novel chain shuttling polymerization used to produce the claimed multi-block copolymer. Present application, p. 11 lines 28-31, *Carnahan Declaration*, ¶5. Thus, the skilled artisan would recognize that the claimed multi-block copolymer with a polydisperse

block number distribution and a polydisperse distribution of block sizes is structurally and physically distinct compared to the monodisperse block copolymers disclosed in *Turner*, *Cozewith420*, and *Cozewith980*. *Carnahan Declaration*, ¶¶5-6.

The tapered copolymer of *Turner*, *Cozewith420*, and *Cozewith980* fails to disclose or suggest the claimed multi-block copolymer with segmented blocks. *Cozewith420* and *Cozewith980* do not refer to the copolymer as tapered. However, the skilled artisan would recognize that the copolymers of *Cozewith420*, and *Cozewith980* are tapered copolymers. *Carnahan Declaration*, ¶7. *Turner* is clear that a tapered polymer is distinct from a block copolymer. *Turner*, col. 1 lines 61-64, col. 2 lines 30-35. In particular, the gradual change in monomer composition from the polymer head to polymer tail in the tapered copolymer of *Turner*, *Cozewith420*, and *Cozewith980* fails to produce segmented blocks. *Carnahan Declaration*, ¶¶7-8. Thus, the skilled artisan would recognize that the tapered copolymer of *Turner*, *Cozewith420*, and/or *Cozewith980* does not have two or more segmented blocks differing in comonomer content (etc.) as in the claimed multi-block copolymer. *Carnahan Declaration*, ¶¶7-8.

The claimed multi-block copolymer is structurally and physically distinct compared to (i) the block copolymer disclosed in *Turner* and (ii) the tapered copolymer of *Turner*, *Cozewith420*, and *Cozewith980* as discussed in detail above. Consequently, no basis exists to assert that the polymers disclosed in *Turner*, *Cozewith420*, and/or *Cozewith980* would inherently have the same properties of the claimed multi-block copolymer.

## **5. Secondary Considerations of Nonobviousness**

A commercial embodiment of the claimed multi-block copolymer, INFUSE™ olefin block copolymer, earned the R&D 100 Award for 2009. *Carnahan Declaration*, ¶9. Receipt of an R&D 100 Award is a prestigious and highly-coveted achievement and is a recognized mark of excellence known to industry, government, and academia as proof that a product is one of the most innovative ideas of the year, nationally and internationally.

The improved properties demonstrated by INFUSE™ olefin block copolymer compared to the prior art, along with the “praise by others” conveyed in the receipt of the R&D 100 Award for INFUSE™ olefin block copolymer is strong evidence that the claimed multi-block copolymer is nonobviousness.

The Examiner is respectfully requested to reconsider the application in view of this Response, to withdraw the rejections, and to forward the application to allowance.

Respectfully submitted,

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